Appendix A

Specific Activities that Do or Do Not Require a Safety Procedure

There is no simple rule for determining when a safety procedure is required. The need for such procedures is determined by management's evaluation of what is required to minimize hazards to the environment, the public, and Laboratory personnel. Section 2.2.1 and the ES&H Integration Worksheet in Chapter 2 provide guidance for making this determination. The ES&H team shall assist management and the Responsible Individual with this evaluation.

A.1 Activities That Do Not Require an FSP or OSP

The following are examples of activities that do not require an OSP or FSP. These activities can be performed in accordance with all appropriate requirements and controls in the *Health & Safety Manual* and the *Environmental Compliance Manual.*

- Work with Class I sealed radiation sources (see Chapter 33 of the *Health & Safety Manual*)
- Work with Class II, III, or IV sealed radioactive sources that meet all of the requirements of that chapter (Chapter 33 of the Manual).
- Work with low-hazard unencapsulated radioactive materials that require only a Type I, II, or III workplace, as determined by the ES&H team health physicist, and that meet all the requirements of Chapter 33 of the Manual.
- Operation of a Class 1 or 2 laser that meets all the requirements of Chapter 28 of the Manual.
- Operation of cranes and forklifts that fall within the scope of Chapter 29 of the Manual.
- High-pressure systems that meet all the requirements of Chapter 32 of the Manual, have an Engineering Safety Note (ESN) updated for current operations, and do not require an OSP in accordance with Fig. 2 of Supplement 32.03. These include systems that do not exceed 1 MPa (~150 psig) or contain 75,000 ft/lb (100 kJ) of isentropic energy for gas; or systems that exceed 10 MPa (~1,500 psig) for liquids if they have a current ESN, have been tested, and are certified by an LLNL-pressure inspector as manned-area safe. Systems that contain toxic materials as specified in Section A.2 of this appendix are not included.
- Use of unmodified, commercially available equipment (e.g., smoke detectors, tritium-illuminated "EXIT" signs, anti-static devices) that incorporate radioactive materials in forms that are encapsulated or not easily dispersible.

- Work on Hazard Category 1 or 2 electrical equipment that complies with the Electronics Engineering Department's *Electrical Safety Policy*, LED 61-00-01-A1A (see Chapter 23 of the Manual).
- Operations with cryogenic materials that meet the requirements of Supplement 22.01 of the Manual.
- Use of hand tools, portable power tools, or machine tools in accordance with Chapter 26 of the Manual.
- A common industrial activity that does not require a safety procedure or environmental review.

A.2 Activities that Require an FSP

The following activities *specifically* require an FSP:

- Non-excluded hazard-ranked facilities.
- Facilities with safety systems whose maintenance is critical (e.g., emergency power for alarms and control panels) to the safe operation of the facility.
- Implementation of a chemical hygiene plan (see Supplement 21.01 of the Manual).

A.3 Activities that Require an OSP

Operational safety procedures are *specifically* required for the following systems and activities:

- New operations in a facility that are not described in the governing FSP.
- Changes to the facility infrastructure that will affect safety and / or require safety systems beyond those described in the governing FSP.

A.4 Activities Requiring an OSP or FSP

The following activities require either an OSP or FSP before work can begin:

- Operations that involve direct beam viewing of a Class 2 laser, or operation of a Class 3 or 4 laser that require an OSP in accordance with Chapter 28 of the Manual.
- Operations where controls are needed beyond those required in the *Health and Safety Manual* and the *Environmental Compliance Manual.*
- Use of fissionable material (see Chapter 31 of the *Health & Safety Manual*).
- Use of explosive materials or devices (see Chapter 24 of the Manual).
- Operations involving equipment that generates ionizing radiation.
- Operations involving open beams, such as x-ray, electron, and other energy beams

- Any Hazard Category 3 or 4 electrical equipment (see Chapter 23 of the Manual).
- Any activity requiring the bypassing of interlocks (see Supplement 11.07 of the Manual).
- Equipment that generates radio-frequency microwaves exceeding the limits described in Supplement 23.57 of the Manual.
- Operations with pressure systems that contain toxic and/or flammable liquids or gases (see Supplements 21.12 and 32.03 of the Manual), or operations that involve the use of the hazardous gases below. Note that this is only a partial list of hazardous gases.

ammonia	hydrogen cyanide monomer
arsine	hydrogen fluoride
boron trichloride	hydrogen selenide
boron trifluoride	hydrogen sulfide
1,3-butadiene	nitric oxide
carbon monoxide (>400 ppm)	nitrogen dioxide
chlorine	nitrogen trifluoride
diborane	organo-arsenic, -tin, -indium,
fluorine	-gallium
germane	phosgene
hydrogen	phosphine
hydrogen bromide	silane and derivatives
hydrogen chloride	vinyl chloride monomer

- Operations where mercury or mercury compounds will be heated.
- Research operations involving biohazards that are not addressed in Chapter 30 of the Manual.
- The processing or handling of beryllium that is likely to generate dusts, mists, fumes, or particulates (see Supplement 21.10 of the Manual).
- Operations involving liquid alkali metals or certain operations involving solid alkali metals.
- Use of some carcinogens (see Supplement 21.16 of the Manual).
- Work with machine tools in which the guarding has been removed.
- Diving activities (other than snorkeling) that are part of the work assignment.
- Any routine activity requiring access beyond a red warning light while the experiment is in progress (see Supplement 11.05 of the Manual).
- Any maintenance activities on a crane trolley platform.
- Any operation that involves the use of hazard category 4 electrical equipment (see Chapter 23 of the Manual).
- Operation of portable equipment at other than ground potential.

- Chemical handling in laboratories that do not meet the requirements of Supplement 21.01 of the Manual.
- Operation of any airborne vehicle.
- Offsite activities where LLNL has full or partial management responsibility, including existing offsite ES&H programs that have been determined to be insufficient to provide satisfactory control.
- Any activity the Hazards Control Department and the Responsible Individual determine needs a procedure based on a joint evaluation of a proposed activity.
- Any activity that does not comply with DOE or other regulatory agency ES&H requirements.
- A new activity or change to an existing activity that meets the criteria described in this appendix.